CITY OF BLISS (PWS 5240002)
SOURCE WATER ASSESSMENT FINAL REPORT

June 13, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the City of Bliss, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The City of Bliss (PWS 5240002) drinking water system consists of two ground water well sources: the East Well and a new well. The West Well was completely abandoned, and is, therefore, not included in this assessment. Because there is no information regarding the new well, it is not included in this report. When information concerning the new well is provided, this report will be amended. The East Well is the main well, located 1.5 miles east of the City of Bliss. The well is located along the Union Pacific Railroad tracks that run on the north side of Bliss and have automatic high susceptibility ratings to IOCs, VOCs, SOCs, and microbial contaminants due to this railroad running within 50 feet of the wellhead.

The current water chemistry issues that affect the wells of the City of Bliss pertain to elevated arsenic levels and disinfection by-products detected during water tests. Arsenic has been detected in the well water at 9 parts per billion (ppb), a level greater than one-half the newly revised arsenic maximum contaminant level (MCL) of 10 ppb. On October 31, 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb, giving public water systems until 2006 to comply with the new standard. The VOCs trihalomethanes (disinfection by-products) were detected at the well manifold in July 1998. These by-products are most likely associated with the hypochlorite disinfection used for this drinking water system and they are not a problem with the source water of the well. Though water can never be totally free of by-products when disinfection is used, they can be reduced through treatment modifications and controls. See <u>www.epa.gov</u> for suggested treatment modifications and by-product information.

The IOCs aluminum, barium, chromium, and fluoride were detected in water samples at concentrations below the MCLs. Nitrate levels in both wells have been slowly rising since 1995. Nitrate levels were recorded in 1995 at 1.63 milligrams per liter (mg/L). In 1998, the nitrate concentrations had risen to 2.4 mg/L and in 2001, the concentrations were recorded 3.58 mg/L. The MCL for nitrate is 10 mg/L.

Iron, magnesium, manganese, nickel and potassium (other IOCs) were detected in the well water in October 1999at levels below the MCLs. Total coliform bacteria were detected in the distribution system in October 2000. No SOCs have been detected in the wells. However, the area has been rated as a priority area for the pesticide atrazine. Also, the county has been rated as high for nitrogen fertilizer use, herbicide use, and agricultural chemical use.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the City of Bliss, drinking water protection activities should first focus on maintaining the requirements of the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system’s components and its capacity). No chemicals should be stored or applied within the 50-foot radius of the wellhead. Any spill from the potential contaminant sources listed in Table 1 of this report should be carefully monitored, as should any future development in the delineated areas. The City of Bliss may want to consider establishing communications with the Union Pacific Railroad to discuss drinking water protection measures to protect the wellheads from spills or releases associated with the railroad.

Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. The City of Bliss may want to implement engineering controls to manage the arsenic levels in order to continue to meet the newly revised arsenic standard. According to a press release posted on the EPA website (www.epa.gov), the EPA intends to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new standard and provide technical assistance to small system operators. The EPA has also stated that it “will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture.” (USEPA, 2001, para 5).

Also, disinfection practices should be maintained if microbial contamination becomes a problem. For more control strategies and disinfection by-products information, see www.epa.gov. Because most of the designated areas are outside the direct jurisdiction of the City of Bliss, partnerships with state and local agencies and industry groups should be established and are critical to the success drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations are near urban and residential land use areas. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. There are transportation corridors through the delineations; therefore the State Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE CITY OF BLISS, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the rankings of this assessment mean.** Maps showing the delineated source water assessment areas and the inventory of significant potential sources of contamination identified within those areas are attached. The lists of significant potential contaminant source categories and their rankings, used to develop this assessment, are also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the EPA to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The DEQ recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The City of Bliss drinking water system includes two community wells that serve a population of 230 through 95 connections. The East Well is the main well, located 1.5 miles east of the City of Bliss within 50 feet of the Union Pacific Railroad tracks that runs along the north side of town. No information was available for the new well. Water from the new well is stored in a new reservoir located near the new well. Hypochlorite disinfection is used to treat the drinking water for the City of Bliss.

The current water chemistry issues that affect the wells of the City of Bliss pertain to elevated arsenic levels and disinfection by-products detected in the water system. Arsenic has been detected at 9 ppb, a level greater than one-half the newly revised arsenic MCL of 10 ppb. On October 31, 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb, giving public water systems until 2006 to comply with the new standard. Disinfection by-products (VOCs) were detected at the well manifold in July 1998. These by-products are most likely associated with the hypochlorite disinfection used for this drinking water system. Though water can never be completely free of by-products when disinfection is used, they can be reduced through treatment modifications. See www.epa.gov for suggested disinfection by-product controls and information.

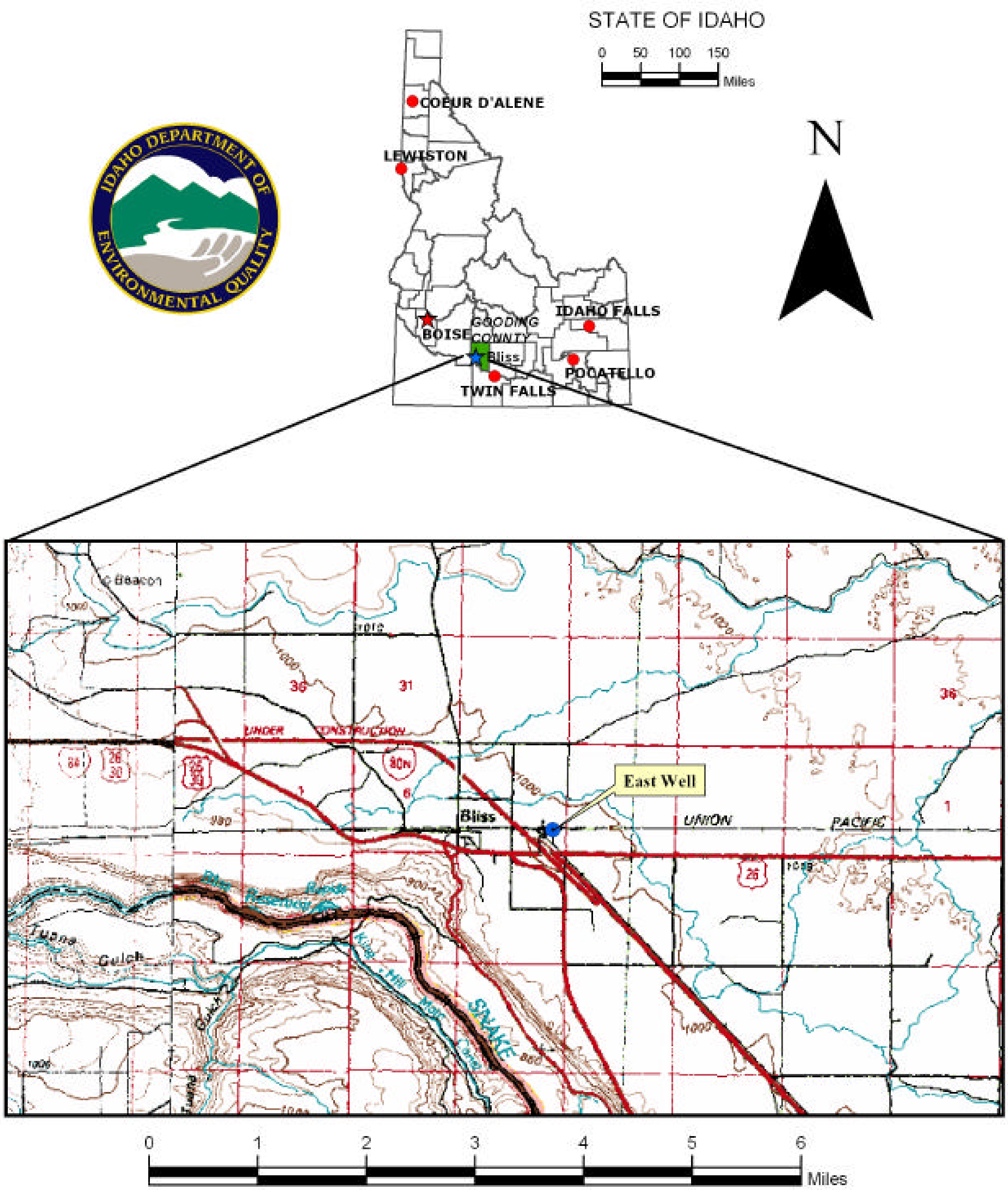
The IOCs aluminum, barium, chromium, and fluoride were detected in water samples at concentrations below the MCLs. Nitrate levels in both wells have been rising since 1995. Nitrate levels were recorded in 1995 at 1.63 mg/L. In 1998, the nitrate concentrations had risen to 2.4 mg/L and in 2001, the concentrations were recorded at 3.58 mg/L. The MCL for nitrate is 10 mg/L. Iron, magnesium, manganese, nickel and potassium (other IOCs) were detected in the well water in October 1999 at levels below the MCLs. Total coliform bacteria were detected in the distribution system in October 2000. No SOCs have been detected in the wells thus far. However, the area has been rated as a priority area for the pesticide atrazine. Also, the county has been rated as high for nitrogen fertilizer use, herbicide use, and agricultural chemical use.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. Washington Group, International (WGI) used a refined computer model approved by the EPA in determining the time-of-travel (TOT) zones for water associated with the Southwest Eastern Snake River Plain (SW ESRP) aquifer. The computer model used site-specific data, assimilated by DEQ and WGI from a variety of sources including local area well logs and hydrogeologic reports summarized below.

The ESRP is a northeast trending basin located in southeastern Idaho. The 10,000 square miles of the plain are filled primarily with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with sedimentary rocks along the margins (Garabedian, 1992, p. 5). Individual basalt flows range from 10 to 50 feet thick, averaging 20 to 25 feet thick (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins.

FIGURE 1- GEOGRAPHIC LOCATION OF CITY OF BLISS, E WELL, PWS 5240002



Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet may be confined locally because of interbedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gal/min are common for wells open to less than 100 feet of the aquifer. Lindholm (1996, p. 18) estimates aquifer thickness to range from 100 feet near the plain's margin to thousands of feet near the center. Models of the regional aquifer have used values ranging from 200 to 3,000 feet to represent aquifer thickness (Cosgrove et al., 1999, p. 15).

Regional ground-water flow is to the southwest paralleling the basin (Cosgrove et al., 1999; deSonneville, 1972, p. 78; Garabedian, 1992, p. 48; and Lindholm, 1996, p. 23). Reported water table gradients range from 3 to 100 ft/mile and average 12 ft/mile (Lindholm, 1996, p. 22). Gradients steepen at the plain's margin and at discharge locations.

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

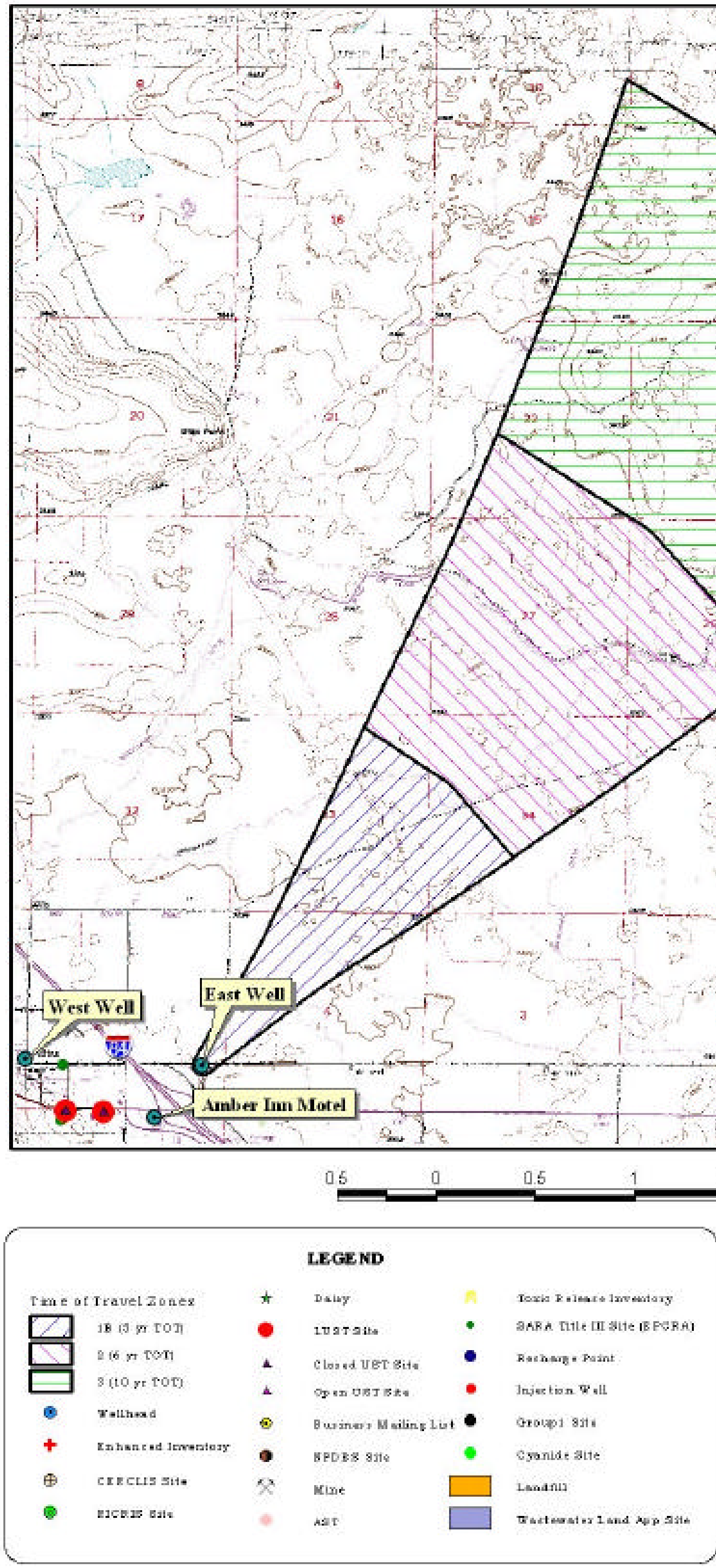
The Southwest Margin of the ESRP hydrologic province is the regional aquifer's primary discharge area. Interpretation of well logs indicates that a 1- to 23-foot-thick layer of sediment overlies the fractured basalt aquifer in Jerome County, and that an 8- to 410-foot-thick layer of sediment overlies the same aquifer in southern Minidoka and Power Counties. Published geologic maps of the Snake River Plain (Whitehead 1992, Plates 1 and 5) indicate there is 100 to 500 feet of Quaternary to Tertiary Basalt aged compacted to poorly consolidated sediments located in the Heyburn area (north of the Snake River near Burley). The saturated thickness of the regional basalt aquifer for the Southwest Margin is estimated to range from less than 500 feet near the Snake River to 1,500 feet near Minidoka.

A published water table map of the Kimberly to Bliss region of the aquifer (Moreland, 1976, p. 5) indicates that the ground-water flow direction in the Southwest Margin is similar to that depicted at the regional scale (e.g., Garabedian, 1992, Plate 4).

Annual average precipitation for the period 1951 to 1980 is 9.6 inches in both Twin Falls and Burley (Kjelstrom, 1995, p. 3). The estimated recharge from precipitation in the Southwest Margin ranges from less than 0.5 inch to more than 2 in./yr (Garabedian, 1992, p. 20). Kjelstrom (1995, p. 13) reports an annual river loss of 110,000 acre-feet to the aquifer for the 34.8-mile Minidoka-to-Milner reach of the Snake River. River gains of 210,000 acre-feet for the 21.5-mile Milner-to-Kimberly reach, and 880,000 acre-feet for the 20.4-mile Kimberly-to-Buhl reach are reported for the same period.

The delineated source water assessment areas for the two wells of the City of Bliss can best be described as wedge shaped corridors that extend 5-5.5 miles from the wellheads (Figure 2 and Figure 3). The actual data used by WGI in determining the source water assessment delineation areas is available from DEQ upon request.

FIGURE 2 - City of Bliss Delineation Map and Potential Contaminant Source Locations



PWS# 5240002
East Well

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and the City of Bliss and from available databases.

The land use outside the City of Bliss is mostly rangeland due to the predominant lava bed terrain. Land use within the immediate area of the wellhead consists of residential property and rangeland.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted in June and July of 2001. This involved identifying and documenting potential contaminant sources within the City of Bliss source water assessment areas through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ.

The delineation crosses the Union Pacific Railroad (Figure 2, Table 1). There are no potential contaminant sources within the 6-year or 10-year time-of-travel (TOT) zones for either delineation.

Table 1. City of Bliss East Well. Potential Contaminant Inventory

Site	Source Description[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
	Union Pacific Railroad	0 – 3	GIS Map	IOC, VOC, SOC, Microbes

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

The well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheet. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity was moderate for the well (see Table 2). This rating reflects the poor- to moderately drained nature of the soil of the region, which potentially decreases the downward movement of contaminants. However, the well log was unavailable, preventing a determination of the vadose zone composition, the presence of any low permeability units, and the depth to first ground water.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The City of Bliss drinking water system consists of two wells. The East Well rated moderate for system construction. The 1994 sanitary survey indicates that the wellhead and surface seal is maintained to standards and that the well is properly protected from surface flooding. The specific system construction information was limited due to the unavailability of the well log.

However, the Public Water System Questionnaire did provide some information. The East Well, drilled to a depth of 257 feet below ground surface (bgs), has a 15.5-inch diameter casing set to a depth of 18.5 feet bgs. The static water level for this well is found at 160 feet bgs. Though the well of the City of Bliss may have met construction standards at the time of their installation, current well construction standards are stricter.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all Public Water Systems (PWSs) to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Twelve-inch to twenty-inch diameter wells require a casing thickness of at least .375 inches. Well tests are required at the design pumping rate for 24 hours or until stabilized drawdown has continued for at least six hours when pumping at 1.5 times the design pumping rate.

Potential Contaminant Source and Land Use

The East Well rated low for IOCs (i.e. arsenic, nitrate), VOCs (i.e. petroleum products), SOCs (i.e. pesticides), and microbial contaminants (i.e. bacteria) (Table 2). The contaminant sources in the 3-year TOT zone of the delineation that could contribute leachable contaminants to the aquifer contributed the largest number of points to the contaminant inventory ratings. The high county level farm chemical use and the pesticide priority area also contributed to the land use ratings. The low land use scores of the East Well reflect the limited number of sources within the delineation and the predominant rangeland surrounding the wells.

Final Susceptibility Rating

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. Additionally, the storage or application of any potential contaminants within 50 feet of the wellhead will lead to an automatic high score. In this case, the Union Pacific Railroad passes within 50 feet of the wellhead, giving an automatic high susceptibility to all potential contaminant categories. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and much agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the East Well of the City of Bliss has an automatic high susceptibility to all categories of potential contaminants.

Table 2. Summary of the City of Bliss Susceptibility Evaluation

	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
Source		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
East Well	M	L	L	L	L	M	H*	H*	H*	H*

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
*** = Automatic high susceptibility due to the Union Pacific RR that passes within 50 feet of both wellheads**

Susceptibility Summary

In terms of total susceptibility, the East Well of the City of Bliss has an automatic high susceptibility to all potential contaminant categories due to the Union Pacific Railroad that passes within 50 feet of the wellheads. In the event of a spill or release associated with this railroad, the aquifer and the wells have the potential to be contaminated (Table 2).

The current water chemistry issues that affect the wells of the City of Bliss pertain to elevated arsenic levels and disinfection by-products detected in the water system. Arsenic has been detected at 9 ppb, a level greater than one-half the newly revised arsenic MCL of 10 ppb. On October 31, 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb, giving public water systems until 2006 to comply with the new standard. Disinfection by-products (VOCs) were detected at the well manifold in July 1998. These by-products are most likely associated with the hypochlorite disinfection used for this drinking water system.

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Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For the City of Bliss, drinking water protection activities should first focus on maintaining the requirements of the sanitary survey. No chemicals should be stored or applied within the 50-foot radius of the wellhead. Any spill from the potential contaminant sources listed in Table 1 of this report should be carefully monitored, as should any future development in the delineated areas. The City of Bliss may want to consider establishing communications with the Union Pacific Railroad to discuss wellhead protection measures to protect the wellheads from spills or releases associated with the railroad that lies within 50 feet.

Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. The City of Bliss may want to implement engineering controls to manage the arsenic levels in order to continue to meet the newly revised arsenic standard. According to a press release posted on the EPA website (www.epa.gov), the EPA intends to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new standard and provide technical assistance to small system operators. The EPA has also stated that it “will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture.” (USEPA, 2001, para 5).

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A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office	(208) 736-2190
State DEQ Office	(208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mharper@velocitus.net) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund@ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Ackerman, D.J., 1995, *Analysis of Steady-State Flow and Advective Transport in the Eastern Snake River Plain Aquifer System, Idaho*, U.S. Geological Survey Water-Resources Investigations Report 94-4257, 25 p. I-FY95.

Cosgrove, D.M., G.S. Johnson, S. Laney, and J, Lindgren, 1999, *Description of the IDWR/UI Snake River Plain Aquifer Model (SRPAM),* Idaho Water Resources Research Institute, University of Idaho, 95 p.

deSonneville, J.L.J, 1972, *Development of a Mathematical Groundwater Model*, Water Resources Research Institute, University of Idaho, Moscow, Idaho, 227 p.

EPA Announces Arsenic Standard for Drinking Water of 10 parts per billion. Retrieved November 1, 2001 from EPA, EPA Newsroom website: http://www.epa.gov/ epahome/headline_110101.htm

Garabedian, S.P., 1992, *Hydrology and Digital Simulation of the Regional Aquifer System, Eastern Snake River Plain, Idaho*, U.S. Geological Survey Professional Paper 1408-F, 102 p., 10 pl. I-FY92.

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997. "*Recommended Standards for Water Works*."

Idaho Department of Environmental Quality, 1997. *Design Standards for Public Drinking Water Systems*. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. *Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules*. IDAPA 37.03.09.

Kjelstrom, L.C., 1995, *Streamflow Gains and Losses in the Snake River and Ground-Water Budgets for the Snake River Plain, Idaho and Eastern Oregon*, U.S. Geological Survey Professional Paper 1408-C, 47 p. I-FY95.

Lindholm, G.F., 1996, *Summary of the Snake River Plain Regional Aquifer-System analysis in Idaho and Eastern Oregon*, U.S. Geological Survey Professional Paper 1408-A, 59 p.

Moreland, J.A., 1976, *Digital-Model Analysis of the Effects of Water-Use Alternatives on Spring Discharges, Gooding and Jerome Counties, Idaho,* U.S. Geological Survey and Idaho Department of Water Resources, Water Information Bulletin No.42, 46p.

Whitehead, R.L., 1992, *Geohydrologic Framework of the Snake River Plain Regional Aquifer System, Idaho and Eastern Oregon*, U.S. Geological Survey Professional Paper 1408-B, 32p. I-FY92

Attachment A

City of Bliss
Susceptibility Analysis
Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report   Public Water System Name : BLISS CITY OF   Well# : E WELL

Public Water System Number 5240002   12/31/2001 8:37:04 AM

1. System Construction		SCORE
Drill Date		
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1994
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		4

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		4

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	0	2	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
4 Points Maximum		1	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	5	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		5	3	7	2
4. Final Susceptibility Source Score		9	9	9	9
5. Final Well Ranking		High	High	High	High